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EXAMINER

WANG, JIN CHENG

ART UNIT	PAPER NUMBER
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2628

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09/05/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

09/982,481

Applicant(s)

HAO ET AL.

Examiner

Jin-Cheng Wang

Art Unit

2628

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 August 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 44-48, 50, 53, 54, 56, 59, 60 and 63-90 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 44-48, 50, 53-54, 56, 59-60, and 63-90 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

Applicant's submission filed on 8/8/2007 has been entered. Claims 1-43, 49, 51-52, 55, 57-58, and 61-62 have been canceled. Claims 83-902 have been newly added. Claims 44, 47-48, 50, 53-54, 56, 59-60 have been amended. Claims 44-48, 50, 53-54, 56, 59-60, and 63-90 are pending in the application.

Response to Arguments

Applicant's arguments and declaration filed on August 8, 2007 has been considered, but are not found persuasive in view of the ground(s) of rejection set forth in the present Office Action.

Applicant's declaration filed March 20, 2007 is not sufficient to overcome the cited references for the reasons given below. Applicant's Affidavits filed 3/20/2007 have been considered as well as Applicant's previous Affidavits filed 10/26/2006.

With respect to the rejection under 35 U.S.C. 102 over the Keim Technical Report, applicant argues by citing *In re Kaplan*, 789 F.2d 1574, 1576, 229 U.S.P.Q. 678 (Fed. Cir. 1986). However, there are fundamental differences between the USPQ case and the present application. The decision is related to the obviousness type double patenting rejection of the invention jointly filed by A & B over an improvement to the invention filed by the sole inventor A. However, Applicant has not established inventorship in the same manner as did Kaplan & Walker.

In the present application, the Affidavits filed by the Applicant are directed towards the authorship of the Keim Technical Report, rather than the inventorship of the claimed subject matter. It lacks a showing of facts that Krug's inventorship of the claimed subject matter as all the statements in Affidavits are concerned with the authorship of Keim Technical Report, as opposed to the inventorship of the claimed subject matter. The factual evidence before us is that Adrian Krug was not an author in the printed Publication and the statements in the Affidavits do not provide any factual evidence of Andrian Krug's inventorship of the claimed subject matter. Although Applicant earnestly stated it was an error not to include Adrian Krug as an author, the inventorship of the claimed subject matter has not been mentioned. The prior art Hao publication shows that Krug has no possession of the claimed subject matter. For example, in the Hao Publication published between the time frame of the Keim Technical Report and the application date of the present application, Andrian Krug has not shown the claimed subject matter, for example, in the new claims 83-90, even after the Keim Publication. No other Publication or evidence shows that Andrian Krug is aware of the improvement over his own work in Hao Publication in the claimed subject matter in the new claims 83-90.

In a non-limiting example, the inventorship of the claimed subject matter is not even mentioned in the Affidavits, let alone the new claims set forth in the claims 83-90. There is no showing how Keim Technical Report is related to the claims 44-48, 50, 53-54, 56, 59-60, 63-82 as well as the new claims 83-90. Applicant made a presumption that Krug's contribution to the Keim Technical Report is equivalent to his contribution to the claimed subject matter. Instead of giving a concrete example how Andrian Krug has contributed to what content or any contents of the Keim HP Technical Publication that may be related to the claimed subject matter, Applicant

at the second Affidavits vaguely declare that the entire content of the Keim HP Technical Report originated with or was obtained from the Applicant, while it is true that other applicants such as Hao-Dayal-Hsu-Keim-Ladisch as a combination have contributed to the entire contents of the Keim HP Technical Report. When the authorship of Andrian Krug in the Keim HP Technical Report is at issue, it is also possible that the stated "Applicant" may include Andrian Krug's contribution to some content or some work of the Keim HP Technical Report, which is usually the case, especially Andrian Krug was omitted from the authorship of the Publication. However, it is not possible that Andrian Krug has contributed to the entire content of the Keim HP Technical Report in the present circumstances, Krug was not included as an author of the printed publication. If Andrian Krug had contributed to the entire content of the Keim HP Technical Report, there should be no reason that he would have been excluded as an author for the Keim HP Technical Report and no error should have been occurred on the part of the other Applicants. Therefore, the examiner was not impressed by this statement because the statement is vague and illogical. Moreover, the statement that the entire content of the Keim HP Technical Report originated with or was obtained from the Applicant is vague and does not necessarily mean the entire content of the Keim HP Technical Report originated with or was obtained from Andrian Krug alone. Other Applicant may have contributed to some contents of the Keim HP Technical Report. Clarification is required. It is required that what content Andrian Krug has contributed to in the Keim HP Technical Report that is related in any way to the claimed subject matter. Moreover, even if it were true that Andrian Krug had contributed to the entire content of the Keim HP Technical Report, it would be unreasonable on the parts of other Applicants including Keim and Hao by stating that Andrian Krug has contributed to the entire content of the Keim HP

Technical Report. The other Applicants including Keim and Hao may have contributed substantially to the contents of the Keim HP Technical Report. Finally, contributing to the work in Keim Publication does not necessarily mean inventorship of the claimed subject matter.

In the filing dated 3/20/2207, Applicant stated in the Affidavits that the entire content of the Keim HP Technical Report originated with or was obtained from the Applicant of the present application instead of establishing the inventorship of the claimed subject matter. There is no statement in Affidavits as to whether the claimed subject matter is originated from or is related to the Keim HP Technical Report. Only the claimed subject matter at issue is of significance here. That Keim's contents were originated from Applicant does not establish Krug's inventorship thereof. Although Andrian Krug may have done some work to Keim Publication, he has not seen fit to characterize it as "his invention". Thus, Applicant has not met the burden of proving facts sufficient to overcome the *prima facie* available reference.

Applicant also cited In re Land & Rogers, 368 F.2d 866, 879, 151 U.S.P.Q. 621 (C.C.P.A. 1966). Andrian Krug has been effectively excluded from the inventorship of the claimed subject matter because Andrian Krug is the coauthor of the Hao HP Technical Report. The Hao and Krug Publication was later published than the Keim Publication. Prior to the application date of the present application, there is no publication or evidence showing that Krug has the possession of the inventorship for the claimed subject matter set forth in the claims 83-90. As a matter of fact, the Hao Publication, which Krug is a coauthor, does not show the subject matter set forth in the claims 83-90. Krug does not show any other work (facts) related to the claimed subject matter, prior to the application date of the present application.

In Remarks, Applicant argues that the Hao and Krug Publication does not disclose the claimed subject matter that in Hao there is only partitioning along the x-axis. If Applicant's argument were true, the Hao and Krug was later published and thus Krug is not aware of the subject matter at issue because Krug failed to disclose an improvement to the pixel bar chart in the claimed subject matter prior to the application date of the present application in Hao Publication. The claimed subject matter is an improvement over the Hao and Krug Publication. Andrian Krug is a co-author of the Publication that discloses a pixel bar chart having only one partitioning attribute and thus does not teach the claimed subject matter (See Page 22 of Remarks filed 8/8/2007). This is in direct contrast with the CCPA case. To the extent that the examiner pointed out the Hao and Krug Publication may also teach the claimed subject matter set forth in the claim 44, for example, Applicant disagrees and contended that Hao and Krug only teaches one partitioning attribute. It should be advised that Applicant has to either withdraw the contention that Hao and Krug Publication failed to teach the claimed subject matter set forth in the claim 44 and similar claims or accept the Examiner's position that the Affidavits filed in March 20, 2007 is deficient.

While the Affidavits can be used as vehicle to establish the inventorship of the claimed subject matter, the two Affidavits filed during the prosecution of the present application by Applicant are employed to establish the authorship of the printed publication. The authorship of the printed publication cannot be altered by Affidavits.

Applicant also stated in the Affidavits that, "Andrian Krug did substantially contribute to the subject matter of the Keim HP Technical Report". Contribution to the subject matter of the Keim HP Technical Report is not the same as or does not necessarily mean the contribution to

the claimed subject matter set forth in the claim invention of the present application. The subject matter of the Keim HP Technical Report contributed by Andrian Krug may differ from the subject matter of the claimed invention. Some subject matter of the Keim HP Technical Report may have no bearing to the subject matter of the claimed invention, and thus Krug's possible contribution to the Keim HP Technical Report may have no bearing with the claimed subject matter. Applicant failed to particularly point out or lacked a showing of the fact what portion of contents in Keim Publication that Andrian Krug has substantially contributed to. Applicant lacked a showing that Andrian Krug has specifically contributed to the claimed subject matter at the time Keim HP Technical Report was published. That is to say, establishing authorship of the reference is different from establishing inventorship of the claimed subject matter. Applicant equates the inventorship of the claimed subject matter with the authorship of the cited reference. Applicant has not established inventorship in the same manner as did Blout-and-Rogers and Mathews.

Applicant argued in Page 22 of Remarks that claim 44 is not anticipated by Hao and Krug while simultaneously submitting the Affidavits under 1.132. Thus, Applicant has not established inventorship in the same manner as did Blout-and-Rogers and Mathews since Applicant did not claim the subject matter based on Keim HP Technical Report, but rather claim the subject matter based on Applicant's own disclosure in a plurality of claims including the independent claims and dependent claims. Moreover, the terms set forth in the Applicant's disclosure do not exactly match the terms used in the Keim HP Technical Report and thus the Affidavits under 1.132 cannot be used as a vehicle to remedy the authorship in order to remove the reference.

Here, it is understood that Affidavits can be employed to establish the inventorship against the prior art reference. Instead of establishing the inventorship of the claimed subject matter, Applicant chooses to establish the authorship of the Keim HP Technical Report since Applicant apparently goes so far to declare that the authorship of the Keim HP Technical Report should have been changed, which is factually an error in the Affidavits. Applicant cannot and thus failed to change the authorship of the Keim Publication. Applicant has not established inventorship in the same manner as did Blout-and-Rogers and Mathews at least because Applicant failed to change the authorship of the Keim Publication by stating that the entire content of Keim HP Technical Report was originated from the Applicant (some of the applicants or applicants Hao-Dayal-Hsu-Keim-Ladisch-Krug as a collection, not Krug alone). Andrian Krug, who is also a coauthor of Hao HP Technical Report, has been effectively removed from the inventorship of the claimed subject matter by Applicant's argument that Andrian Krug in the Hao Publication does not teach the claimed subject matter. The examiner was not impressed. Even if there were only the aforementioned affidavits to evidence Andrian Krug's contribution to the Keim HP Technical Report, the inventorship of the claimed subject matter remains unresolved and has not been clearly established in the Affidavits because the Affidavits assume that the inventorship of the claimed subject matter is equivalent to Krug's contribution to the Keim Technical Report or the authorship of Andrian Krug in the Keim Technical Report. Applicant failed to provide statements with regards to the inventorship of the claimed subject matter in any way related to the Keim HP Technical Report in the Affidavits. Nor has Applicant acknowledged in the Affidavits that Keim HP Technical Report teach every aspect of the

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claimed subject matter, especially the new claims included in the present amendment.

Applicant's Affidavits are deficient at least for the above reasons.

Applicant also cited *In re Facius*, 408 F.2d 1396, 161 U.S.P.Q. 294 (C.C.P.A. 1969). In this case, the board's decision is affirmed by the court. Applicant apparently cited a CCPA case against himself. Moreover, in the present application, Applicant uses the vehicle of the Affidavit under 1.132, as opposed to Affidavit under 1.131 in the *In re Facius* case. Moreover, applicants' affidavits under 132 are insufficient to overcome the cited Keim reference and lack a showing of facts that Adrian Krug is an author or contributor to the Keim Technical Report. Since the Keim publication is *prima facie* available as a reference against Applicants, the burden is on applicants to establish the facts necessary to "overcome" that reference. Applicants have failed to meet this burden.

In the declaration filed on March 20, 2007, applicants addressed the Keim reference, i.e., D. Keim, M. C. Hao, J. Ladisch, M. Hsu, U. Dayal, "Pixel Bar Charts: A New Technique for Visualizing Large Multi-Attribute Data Sets without Aggregation", HP Technical Report, April 11, 2001, pp. 1-10 (hereinafter Keim). Applicant stated that, "the entire content of the Keim HP Technical Report originated with or was obtained from the Applicant of the present application" and "the authors of the Keim HP Technical Report derived their knowledge of the subject matter described in the Keim HP Technical Report from the Applicant of the present application." The examiner is not impressed. They are deemed insufficient to overcome the cited reference. Moreover, applicant failed to provide support to the statements and speculated, "the entire content of the Keim HP Technical Report originated with or was obtained from the Applicant of

the present application” wherein Applicant may just refer to one or more inventors, Keim-Hao-Hsu-Ladisch-Dayal. Clarification is required.

Applicant further speculated that, “the authors of the Keim HP Technical Report derived their knowledge of the subject matter described in the Keim HP Technical Report from the Applicant of the present application.” As discussed above, Applicant may refer to one or more of the inventors, Keim-Hao-Hsu-Ladisch-Dayal. The Keim HP Technical Report is NOT fully described in the present application as the descriptions set forth in Keim HP Technical Report and those in the present application are substantially different. For example, the disclosure set forth in Keim HP Technical Report is not the same as the disclosure in the present application. The Keim HP Technical Report is substantially different from the present application at least for the reasons that the contents of the Keim HP Technical Report differ from the description of the present application. Applicant thus failed to support how the difference in the Keim HP Technical Report can be derived from the Applicant of the present application. The inventor Adrian Krug has not contributed to the Keim HP Technical Report. Finally, applicants have not properly addressed the fact that Adrian Krug who is not the author of the published Keim HP Technical Report by submitting 1.312 Declaration stating that Adrian Krug should have been an author of the Keim Technical Report. However, the general public already knows that Adrian Krug is not an author of the printed publication. It is too later for applicant to add an author in the already published printed publication.

Applicant argues that if the last row of Fig. 3 of Ankerst is taken to be the pixel bar chart of claim 44, then the last row depicted in Fig. 3 of Ankerst cannot satisfy the partitioning and

sorting tasks of claim 44. Applicant misinterpreted the Office Action. This assertion is based on applicant's assumption that the last row of the pixel bar chart(s) in Fig. 3 of Ankerst is the claimed pixel bar chart. Ankerst teaches plural bars. Nowhere did the last Office Action state that the last row of the pixel bar chart(s) in Fig. 3 of Ankerst meets the claim limitation of "the pixel bar chart".

Applicant argues with respect to Ankerst reference that there is no disclosure in Ankerst of sorting record-assigned pixels within each sub-group according to a second ordering attribute along the second axis of the pixel bar chart. The examiner respectfully disagrees. Ankerst clearly teaches in Page 5 allowing the data records to be divided into a plurality of partitions along the x-axis for a bar in the pixel bar chart (See Fig. 4). Applicant argues that Fig. 4 and Fig. 3 are different structures. While the figures are drawn separately, Ankerst's teaching should be read as a whole, rather than each individual figure to teach every limitations in the claim. In the present case, even Fig. 4 alone shows partitioning the pixel bar chart along the y-axis according to the categorical attribute and partitioning/splitting each bar along the x-axis into a plurality of classes according to the splitting attribute.

As addressed below, Fig. 3-5 and 7 discloses the second ordering attribute on the x-axis, e.g., the second ordering attribute ordered according to the attribute values falling into Class A, Class B or Class C by splitting the pixels into the set of class partitions in accordance with the splitting attribute wherein the second ordering attribute is the class partition attribute or the splitting attribute characterized by the categorical attribute numbers falling into the class partitions.

Applicant also argues that multiple rows are ordered according to different attributes along the x-axis, it would be impossible for Ankerst to order pixels in each sub-group according to a second ordering attribute along the second axis of the pixel bar chart. This argument is incorrect because multiple rows (groups) are ordered along the y-axis and Ankerst orders the pixels/records in each sub-group (class partition) in accordance with the splitting attributes. A plurality of splitting attributes for ordering the pixels in each bar (group) at least includes one splitting attribute for ordering the pixels in each bar and thus meeting the claim limitation of “a second ordering attribute”. Applicant argues that ordering of pixels in the row corresponding to attribute 90 would be according to attribute 90. This argument is incorrect because the pixels in each bar (group) are ordered in accordance with the splitting attributes, rather than the categorical attribute.

In the new amendment filed August 8, 2007, Applicant added new claims 83-90 reciting “the first dividing attribute, second dividing attribute, first ordering attribute, and second ordering attribute are distinct attributes.” However, Applicant’s specification discloses in Page 10 that “each of the first dividing attribute and the second dividing attribute may be the same as the first ordering attribute, the second ordering attribute and the visual indicator attribute.” Applicant’s pixel bar chart(s) in Figs. 3(a)-3(c) failed to show the first dividing attribute and the second dividing attribute may be distinct from the first order attribute and the second ordering attribute.

Ankerst teaches in Page 4 selecting categorical attributes (dividing attributes) from a plurality of categorical attributes. Ankerst teaches in Fig. 3 an ordering attribute and in Page 3 that each attribute is sorted separately and the induced order is used for the arrangement of the

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pixels and using the categorical attribute as the first dividing attribute and then mapping the categories into the different numbers in order to sort the bars (groups) and thus the first ordering attribute (the mapping number of the categorical attribute) is distinct from the first dividing attribute (categorical attribute). Ankerst teaches the sorting order determined by an algorithm (Page 3). Ankerst further discloses a different sorting mechanism for sorting the bars (groups) that the user is enabled to change the sorting of the categories by manually dragging them to a desired position. Ankerst teaches selecting a splitting attribute from several candidate splitting attributes (Page 5). Ankerst discloses in Page 4 that the user has to select the splitting attribute as well as the splitting point for each node in the current bar. Ankerst also discloses that the best split points can be calculated and visualized as well. Ankerst teaches the splitting attributes for dividing each bar (group) of pixels into class partitions and pixels/records in each class partition are ordered in a specified way (See Figs. 4-5). Ankerst discloses that the sorted attribute values (second ordering attribute) are mapped to pixels in a line-by-line fashion according to their order for pixels in a class partition or a bar wherein the Fig. 2 indicates the sorting order within each bar and thus the sorting order for each class partition within each bar.

Ankerst discloses a method executed by a computer to form a pixel bar chart for display on a display monitor (*e.g., the pixel bar chart of Fig. 3 particularly sorted by the category attribute including the last row of the pixel bar chart having the attribute 120*), comprising:

Obtaining a set of records, each record comprising a plurality of attributes (*e.g., Pages 3 of Ankerst discloses data records of the DNA training data with a plurality of attributes and Fig 5 plots 50,000 data records from two different classes with two numerical attributes*);

Assigning a pixel to each of said records to provide record-assigned pixels, wherein every such record-assigned pixel in the chart is assigned to a different record (*e.g., Any of the Figs. 3-5 and 7 discloses a pixel bar chart. e.g., the pixel bar chart of Fig. 3 includes the last row having the attribute 120 wherein every pixel in each of the charts is assigned to a unique record and the claim limitation that every pixel in the chart is assigned to a record is explicitly taught in column 2 of Page 3*); and

Constructing the pixel bar chart by (*Any of Figs. 3-5 and 7 disclose a pixel bar chart*):

Partitioning the record-assigned pixels into groups (*of pixels ordered according to the attribute values; see Figs. 4-5 wherein pixels are organized into groups along the y-axis in accordance with the categorical attribute numbers*) along a first axis of the pixel bar chart according to a first dividing attribute (*e.g., See Figs. 3-5 and 7 wherein the colored pixels are clearly shown wherein the first dividing attribute is set forth in the x-axis. See Page 3. Within a bar, the sorted attribute values are mapped to pixels in a line-by-line fashion according to their order (See Fig. 2 or Fig. 4 for this order). Each attribute is visualized independently from the other attributes in a separate bar. Thus the first dividing attribute is the ordering for the categorical attributes in accordance with the categorical attribute numbers; see Fig. 5*);

Partitioning the record-assigned pixels in the groups into sub-groups (*See Fig. 4-5 wherein the pixels in the groups of categorical attributes are further divided into sub-groups or class partitions along the x-axis in accordance with the splitting attribute by performing an n-ary split*) along a second axis of the pixel bar chart according to a second dividing attribute (*e.g., by splitting as disclosed in Page 5; the second dividing attribute is the splitting attribute and thus*

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second dividing attribute is along the x-axis of Fig. 3-5 wherein the attributes are divided along the x-axis into class partitions by the virtue of the splitting attribute);

After partitioning into the sub-groups, sorting, in each of the sub-groups, the record-assigned pixels according to a first ordering attribute (*e.g., See Figs. 3-5 and 7 wherein the pixels in the class partitions are sorted in accordance with the categorical attribute numbers and the first group of the class partitions is ordered in the lower level and the second group of the class partitions is ordered in the upper level; more categorical attributes are shown in Fig. 3*) along the first axis of the pixel bar chart, and according to a second ordering attribute along the second axis of the pixel bar chart (*Fig. 3-5 and 7 discloses the second ordering attribute on the x-axis, e.g., the second ordering attribute ordered according to the attribute values falling into Class A, Class B or Class C by splitting the pixels into the set of class partitions in accordance with the splitting attribute wherein the second ordering attribute is the class partition attribute or the splitting attribute characterized by the categorical attribute numbers falling into the class partitions*), wherein each record-assigned pixel is adjacent at least one other record-assigned pixel (*Figs. 3-5 and 7*).

Applicant also argues with the Hao Publication that there is no partitioning along the y-axis. However, USPTO personnel are to give claims their broadest reasonable interpretation in light of the supporting disclosure. In re Morris, 127 F.3d 1048, 1054-55, 44 USPQ2d 1023, 1027-28 (Fed. Cir. 1997). Limitations appearing in the specification but not recited in the claim should not be read into the claim. E-Pass Techs., Inc. v. 3Com Corp., 343 F.3d 1364, 1369, 67 USPQ2d 1947, 1950 (Fed. Cir. 2003) (claims must be interpreted “in view of the specification”

without importing limitations from the specification into the claims unnecessarily). In re Prater, 415 F.2d 1393, 1404-05, 162 USPQ 541, 550-551 (CCPA 1969). See also In re Zletz, 893 F.2d 319, 321-22, 13 USPQ2d 1320, 1322 (Fed. Cir. 1989) (“During patent examination the pending claims must be interpreted as broadly as their terms reasonably allow.... The reason is simply that during patent prosecution when claims can be amended, ambiguities should be recognized, scope and breadth of language explored, and clarification imposed.... An essential purpose of patent examination is to fashion claims that are precise, clear, correct, and unambiguous. Only in this way can uncertainties of claim scope be removed, as much as possible, during the administrative process.”).

Hao discloses in Page 3 that the second dividing attribute is along the y-axis based on the attribute values such as the purchase amount or search type; see Fig. 2 wherein the sub-groups are the clusters of pixels having the same attribute values of the second ordering attribute with the same coloring attributes and the second ordering attribute is the same as the second dividing attribute. See Page 5-6; Figs. 1, 2, 4, 5, and 6. See also Page 5-6 and Figs. 5-6 that the pixels are colored corresponding to the different attribute values wherein the color represent an additional attribute of the customer; e.g., Pages 5-6 of Hao disclose a set of data items corresponding to a set of records such as e-commerce sales transactions with data records having such attributes as time type, number of visits and dollar amounts.

Claim Objections

Claim 90 is objected to because of the following informalities: claim 90 is a new claim and however its status is not marked. Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

Claims 44-48, 50, 53-54, 56, 59-60, and 63-90 are rejected under 35 U.S.C. 102(a) as being anticipated by D. Keim, M. C. Hao, J. Ladisch, M. Hsu, U. Dayal, “Pixel Bar Charts: A New Technique for Visualizing Large Multi-Attribute Data Sets without Aggregation”, HP Technical Report, April 11, 2001, pp. 1-10 (hereinafter Keim).

Re Claims 44, 50, 56 and 81:

Keim discloses a method executed by a computer to form a pixel bar chart for display on a display monitor, comprising:

Obtaining a set of records, each record comprising a plurality of attributes (*e.g., Pages 2-3 of Keim disclose a set of data items corresponding to a set of records such as e-commerce sales transactions with data records having such attributes as product type, number of visits and dollar amounts; the product type is used later as the partitioning attribute and the number of visits and dollar amounts as the x and y ordering attributes. The color represents the dollar amount spent by the corresponding customer wherein high dollar amounts correspond to bright colors and low dollar amounts to dark colors*);

Assigning a pixel to each of said records to provide record-assigned pixels, wherein every such record-assigned pixel in the chart is assigned to a different record (*e.g., Page 2 of Keim discloses the one-to-one correspondence between the data records and pixels in the pixel bar charts; see Figs. 1b, 2, 3b, 4a, 4b, 4c and 9-10*); and

Constructing the pixel bar chart by (*Figs. 1b, 2, 3b, 4a, 4b, 4c and 9-10 disclose pixel bar charts*):

Partitioning the record-assigned pixels into groups along a first axis of the pixel bar chart according to a first dividing attribute (*Fig. 7 discloses the first ordering attribute on the x-axis and the second order attribute on the y-axis as does Figs. 1b, 2, 3b, 4a, 4b, 4c and 9-10 wherein the first ordering attribute is the first dividing attribute; Figs. 1b, 2, 3b, 4a, 4b, 4c and 9-10. See also Page 2-3 that the pixels are colored corresponding to the different attribute values wherein the color represent an additional attribute of the customer; e.g., Pages 2-3 of Keim disclose a set of data items corresponding to a set of records such as e-commerce sales transactions with data records having such attributes as product type, number of visits and dollar amounts; the product type is used later as the partitioning attribute and the number of visits and dollar amounts as the x and y ordering attributes. The color represents the dollar amount spent by the corresponding customer wherein high dollar amounts correspond to bright colors and low dollar amounts to dark colors; see also Pages 6-7 for the partitioning algorithm or the pixel placement algorithm; see Figs. 8-10 for the sub-groups of pixels according to a second dividing attribute*);

Partitioning the record-assigned pixels in the groups into sub-groups along a second axis of the pixel bar chart according to a second dividing attribute (*Fig. 7 discloses the first ordering*

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attribute on the x-axis and the second ordering attribute on the y-axis as does Figs. 1b, 2, 3b, 4a, 4b, 4c and 9-10 wherein the second ordering attribute is the second dividing attribute; Figs. 1b, 2, 3b, 4a, 4b, 4c and 9-10. See also Page 2-3 that the pixels are colored corresponding to the different attribute values wherein the color represent an additional attribute of the customer; e.g., Pages 2-3 of Keim disclose a set of data items corresponding to a set of records such as e-commerce sales transactions with data records having such attributes as product type, number of visits and dollar amounts; the product type is used later as the partitioning attribute and the number of visits and dollar amounts as the x and y ordering attributes. **The color represents the dollar amount spent by the corresponding customer wherein high dollar amounts correspond to bright colors and low dollar amounts to dark colors; see also Pages 6-7 for the partitioning algorithm or the pixel placement algorithm; see Figs. 8-10 for the sub-groups of pixels according to a second dividing attribute);**

After partitioning into the sub-groups, sorting, in each of the sub-groups, the record-assigned pixels according to a first ordering attribute along the first axis of the pixel bar chart, and according to a second ordering attribute along the second axis of the pixel bar chart (Fig. 7 discloses the first ordering attribute on the x-axis and the second order attribute on the y-axis as does Figs. 1b, 2, 3b, 4a, 4b, 4c and 9-10), wherein each record-assigned pixel is adjacent at least one other record-assigned pixel (Figs. 1b, 2, 3b, 4a, 4b, 4c and 9-10).

The claims 50, 56 and 62 are subject to the same rationale of rejection set forth in the claim 44.

Re Claims 45 and 57:

The claim 45 encompasses the same scope of invention as that of the claim 44 except additional claim limitation for each record-assigned pixel assigning a selectable visual indicator to the record-assigned pixel based on an attribute value of each record so that some pixels have a different visual indicator than other pixels. However, Keim further discloses the claim limitation for each record-assigned pixel assigning a selectable visual indicator to the record-assigned pixel based on an attribute value of each record so that some pixels have a different visual indicator than other pixels (*Figs. 1b, 2, 3b, 4a, 4b, 4c and 9-10. See also Page 2-3 that the pixels are colored corresponding to the different attribute values wherein the color represent an additional attribute of the customer*).

The claim 57 is subject to the same rationale of rejection set forth in the claim 45.

Re Claims 46 and 58:

The claim 46 encompasses the same scope of invention as that of the claim 45 except additional claim limitation the visual indicator comprises color. However, Keim further discloses the claim limitation the visual indicator comprises color (*Figs. 1b, 2, 3b, 4a, 4b, 4c and 9-10. See also Page 2-3 that the pixels are colored corresponding to the different attribute values wherein the color represent an additional attribute of the customer, e.g., sales amount, number of visits or sales quantity*).

The claim 58 is subject to the same rationale of rejection set forth in the claim 46.

Re Claims 47, 53 and 59:

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The claim 47 encompasses the same scope of invention as that of the claim 44 except additional claim limitation said records are obtained from a multidimensional data set in which each record comprises a plurality of attributes and said method further comprises assigning a selectable visual indicator to each record-assigned pixel based on an attribute of each record so that some pixels have a different visual indicator than other pixels. However, Keim further discloses the claim limitation said records are obtained from a multidimensional data set in which each record comprises a plurality of attributes and said method further comprises assigning a selectable visual indicator to each record-assigned pixel based on an attribute of each record so that some pixels have a different visual indicator than other pixels (*Figs. 1b, 2, 3b, 4a, 4b, 4c and 9-10*. See also Page 2-3 that the pixels are colored corresponding to the different attribute values wherein the color represent an additional attribute of the customer; e.g., Pages 2-3 of Keim disclose a set of data items corresponding to a set of records such as e-commerce sales transactions with data records having such attributes as product type, number of visits and dollar amounts; the product type is used later as the partitioning attribute and the number of visits and dollar amounts as the x and y ordering attributes. **The color represents the dollar amount spent by the corresponding customer wherein high dollar amounts correspond to bright colors and low dollar amounts to dark colors**).

The claims 53 and 59 are subject to the same rationale of rejection set forth in the claim 47.

Re Claims 48, 54, and 60:

The claim 48 encompasses the same scope of invention as that of the claim 44 except additional claim limitation wherein the pixel bar chart comprises a plurality of columns, each column comprising a plurality of pixels and having a width measured in terms of pixels, and the method further comprises causing the width of at least one column to be different than the width of at least one other column. However, Keim further discloses the claim limitation wherein the pixel bar chart comprises a plurality of columns, each column comprising a plurality of pixels and having a width measured in terms of pixels, and the method further comprises causing the width of at least one column to be different than the width of at least one other column (*e.g.*, Figs. 1b, 3b, 4 and 9-10).

The claims 54 and 60 are subject to the same rationale of rejection set forth in the claim 48.

Re Claims 63, 67, 70-71, 77:

Keim further discloses the claim limitation of sorting the record assigned pixels in each sub-group according to the first and second ordering attributes and performing a two-dimensional sort of the record-assigned pixels in each sub-group. Keim discloses in Figs. 1b, 2, 3b, 4a, 4b, 4c and 9-10 the claim limitation. See also Page 2-3 that the pixels are colored corresponding to the different attribute values wherein the color represent an additional attribute of the customer; e.g., Pages 2-3 of Keim disclose a set of data items corresponding to a set of records such as e-commerce sales transactions with data records having such attributes as product type, number of visits and dollar amounts; the product type is used later as the partitioning attribute and the number of visits and dollar amounts as the x and y ordering attributes. The color represents the dollar amount spent by the corresponding customer wherein

high dollar amounts correspond to bright colors and low dollar amounts to dark colors; see also Pages 6-7 for the partitioning algorithm or the pixel placement algorithm; see Figs. 8-10 for the sub-groups of pixels according to a second dividing attribute.

Re Claim 64:

Keim further discloses the claim limitation of determining a first one-dimensional histogram for the first ordering attribute, and a second one-dimensional histogram for the second ordering attribute, wherein sorting the record-assigned pixels in each sub-group is based on the first and second one-dimensional histograms. Keim discloses in Figs. 1b, 2, 3b, 4a, 4b, 4c and 9-10 the claim limitation. See also Page 2-3 that the pixels are colored corresponding to the different attribute values wherein the color represent an additional attribute of the customer; e.g., Pages 2-3 of Keim disclose a set of data items corresponding to a set of records such as e-commerce sales transactions with data records having such attributes as product type, number of visits and dollar amounts; the product type is used later as the partitioning attribute and the number of visits and dollar amounts as the x and y ordering attributes. The color represents the dollar amount spent by the corresponding customer wherein high dollar amounts correspond to bright colors and low dollar amounts to dark colors; see also Pages 6-7 for the partitioning algorithm or the pixel placement algorithm; see Figs. 8-10 for the sub-groups of pixels according to a second dividing attribute.

Re Claim 65, 72 and 78:

Keim further discloses the claim limitation of selecting a visual indicator attribute from the plurality of attributes, wherein the visual indicator attribute is different from both the first and second ordering attributes; and applying colors to the record-assigned pixels according to the

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visual indicator attribute such that at least some of the record-assigned pixels have different colors. Keim discloses in Figs. 1b, 2, 3b, 4a, 4b, 4c and 9-10 the claim limitation. See also Page 2-3 that the pixels are colored corresponding to the different attribute values wherein the color represent an additional attribute of the customer; e.g., Pages 2-3 of Keim disclose a set of data items corresponding to a set of records such as e-commerce sales transactions with data records having such attributes as product type, number of visits and dollar amounts; the product type is used later as the partitioning attribute and the number of visits and dollar amounts as the x and y ordering attributes. The color represents the dollar amount spent by the corresponding customer wherein high dollar amounts correspond to bright colors and low dollar amounts to dark colors; see also Pages 6-7 for the partitioning algorithm or the pixel placement algorithm; see Figs. 8-10 for the sub-groups of pixels according to a second dividing attribute.

The claims 72 and 78 are subject to the same rationale of rejection set forth in the claim 65.

Re Claims 66, 69, 73, 75-76, 80 and 82:

Keim further discloses the claim limitation that partitioning into sub-groups causes at least some of the sub-groups to have different widths measured in terms of pixels along the first axis, and causes at least some of the sub-groups to have different heights measured in terms of pixels along the second axis (*e.g., Figs. 6-7*).

The claims 69, 73, 75-76, 80 and 82 are subject to the same rationale of rejection set forth in the claim 66.

Re Claims 68, 74 and 79:

Keim further discloses the claim limitation of constructing the pixel bar chart by arranging the sub-groups in an array defined by the first and second axes (*e.g., Figs. 6-7*).

The claims 74 and 79 are subject to the same rationale of rejection set forth in the claim 68.

Claims 83-90:

In the new amendment filed August 8, 2007, Applicant added new claims 83-90 reciting “the first dividing attribute, second dividing attribute, first ordering attribute, and second ordering attribute are distinct attributes.” However, Applicant’s specification discloses in Page 10 that “each of the first dividing attribute and the second dividing attribute may be the same as the first ordering attribute, the second ordering attribute and the visual indicator attribute.” Applicants pixel bar chart(s) in Figs. 3(a)-3(c) failed to show the first dividing attribute and the second dividing attribute may be distinct from the first order attribute and the second ordering attribute.

Keim discloses in Page 5 and Section 4.2 the claim limitation that “the first dividing attribute, second dividing attribute, first ordering attribute, and second ordering attribute are distinct attributes” as well as selecting from the plurality of attributes.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 44-48, 50, 53-54, 56, 59-60, and 63-90 are rejected under 35 U.S.C. 102(b) as being anticipated by M. Ankerst, M. Ester, H.-P. Kriegel, "Towards an effective cooperation of the computer and the user for classification", Proc. 6th Int. Conf. On Knowledge Discovery and Data Mining, (KDD '2000), Aug. 20-23, 2000, Boston, MA, 2000, pp. 1-10 (hereinafter Ankerst).

Re Claims 44, 50, 56, and 81:

Ankerst discloses a method executed by a computer to form a pixel bar chart for display on a display monitor (*e.g., the pixel bar chart of Fig. 3 particularly sorted by the category attribute including the last row of the pixel bar chart having the attribute 120*), comprising:

Obtaining a set of records, each record comprising a plurality of attributes (*e.g., Pages 3 of Ankerst discloses data records of the DNA training data with a plurality of attributes and Fig 5 plots 50,000 data records from two different classes with two numerical attributes*);

Assigning a pixel to each of said records to provide record-assigned pixels, wherein every such record-assigned pixel in the chart is assigned to a different record (*e.g., Any of the Figs. 3-5 and 7 discloses a pixel bar chart. e.g., the pixel bar chart of Fig. 3 includes the last row having the attribute 120 wherein every pixel in each of the charts is assigned to a unique record and the claim limitation that every pixel in the chart is assigned to a record is explicitly taught in column 2 of Page 3*); and

Constructing the pixel bar chart by (*Any of Figs. 3-5 and 7 disclose a pixel bar chart*):

Partitioning the record-assigned pixels into groups (*of pixels ordered according to the attribute values; see Figs. 4-5 wherein pixels are organized into groups along the y-axis in accordance with the categorical attribute numbers*) along a first axis of the pixel bar chart according to a first dividing attribute (*e.g., See Figs. 3-5 and 7 wherein the colored pixels are clearly shown wherein the first dividing attribute is set forth in the x-axis. See Page 3. Within a bar, the sorted attribute values are mapped to pixels in a line-by-line fashion according to their order (See Fig. 2 or Fig. 4 for this order). Each attribute is visualized independently from the other attributes in a separate bar. Thus the first dividing attribute is the ordering for the categorical attributes in accordance with the categorical attribute numbers; see Fig. 5);*

Partitioning the record-assigned pixels in the groups into sub-groups (*See Fig. 4-5 wherein the pixels in the groups of categorical attributes are further divided into sub-groups or class partitions along the x-axis in accordance with the splitting attribute by performing an n-ary split) along a second axis of the pixel bar chart according to a second dividing attribute (*e.g., by splitting as disclosed in Page 5; the second dividing attribute is the splitting attribute and thus second dividing attribute is along the x-axis of Fig. 3-5 wherein the attributes are divided along the x-axis into class partitions by the virtue of the splitting attribute)*;*

After partitioning into the sub-groups, sorting, in each of the sub-groups, the record-assigned pixels according to a first ordering attribute (*e.g., See Figs. 3-5 and 7 wherein the pixels in the class partitions are sorted in accordance with the categorical attribute numbers and the first group of the class partitions is ordered in the lower level and the second group of the class partitions is ordered in the upper level; more categorical attributes are shown in Fig. 3)*) along the first axis of the pixel bar chart, and according to a second ordering attribute along the second

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axis of the pixel bar chart (Fig. 3-5 and 7 discloses the second ordering attribute on the x-axis, e.g., the second ordering attribute ordered according to the attribute values falling into Class A, Class B or Class C by splitting the pixels into the set of class partitions in accordance with the splitting attribute wherein the second ordering attribute is the class partition attribute or the splitting attribute characterized by the categorical attribute numbers falling into the class partitions), wherein each record-assigned pixel is adjacent at least one other record-assigned pixel (Figs. 3-5 and 7).

The claims 50, 56 and 81 are subject to the same rationale of rejection set forth in the claim 44.

Re Claims 45 and 57:

The claim 45 encompasses the same scope of invention as that of the claim 44 except additional claim limitation for each record-assigned pixel assigning a selectable visual indicator to the record-assigned pixel based on an attribute value of each record so that some pixels have a different visual indicator than other pixels. However, Ankerst further discloses the claim limitation for each record-assigned pixel assigning a selectable visual indicator to the record-assigned pixel based on an attribute value of each record so that some pixels have a different visual indicator than other pixels (Figs. 3-5 and 7 wherein the colored pixels are clearly shown and Fig. 1 illustrates a possible color coding of the different class labels and Figs. 3-5 and 7 illustrate the color coded pixels wherein one segment of pixels has different colors from the other segment of pixels).

The claim 57 is subject to the same rationale of rejection set forth in the claim 45.

Re Claims 46 and 58:

The claim 46 encompasses the same scope of invention as that of the claim 45 except additional claim limitation the visual indicator comprises color. However, Ankerst further discloses the claim limitation the visual indicator comprises color (*Figs. 3-5 and 7 wherein the colored pixels are clearly shown and Fig. 1 illustrates a possible color coding of the different class labels and Figs. 3-5 and 7 illustrate the color coded pixels wherein one segment of pixels has different colors from the other segment of pixels*).

The claim 58 is subject to the same rationale of rejection set forth in the claim 46.

Re Claims 47, 53 and 59:

The claim 47 encompasses the same scope of invention as that of the claim 44 except additional claim limitation said records are obtained from a multidimensional data set in which each record comprises a plurality of attributes and said method further comprises assigning a selectable visual indicator to each record-assigned pixel based on an attribute of each record so that some pixels have a different visual indicator than other pixels. However, Ankerst further discloses the claim limitation said records are obtained from a multidimensional data set in which each record comprises a plurality of attributes (*e.g., Pages 3 of Ankerst discloses data records of the DNA training data with a plurality of attributes and Fig 5 plots 50,000 data records from two different classes with two numerical attributes*) and said method further comprises assigning a selectable visual indicator (*e.g., color*) to each record-assigned pixel based

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on an attribute of each record so that some pixels have a different visual indicator than other pixels (*Figs. 3-5 and 7 wherein the colored pixels are clearly shown and Fig. 1 illustrates a possible color coding of the different class labels and Figs. 3-5 and 7 illustrate the color coded pixels wherein one segment of pixels has different colors from the other segment of pixels*).

The claims 53 and 59 are subject to the same rationale of rejection set forth in the claim 47.

Re Claims 48, 54, and 60:

The claim 48 encompasses the same scope of invention as that of the claim 44 except additional claim limitation wherein the pixel bar chart comprises a plurality of columns, each column comprising a plurality of pixels and having a width measured in terms of pixels, and the method further comprises causing the width of at least one column to be different than the width of at least one other column. However, Ankerst further discloses the claim limitation wherein the pixel bar chart comprises a plurality of columns, each column comprising a plurality of pixels and having a width measured in terms of pixels, and the method further comprises causing the width of at least one column to be different than the width of at least one other column (*e.g., by splitting as disclosed in Page 3 by selecting the splitting attribute of Page 4; See Figs. 3-5 and 7 wherein the colored pixels are clearly shown and Fig. 1 illustrates a possible color coding of the different class labels and Figs. 3-5 and 7 illustrate the color coded pixels wherein one segment of pixels has different colors from the other segment of pixels*).

The claims 54 and 60 are subject to the same rationale of rejection set forth in the claim 48.

Re Claims 63, 67, 70-71, 77:

Ankerst further discloses the claim limitation of sorting the record assigned pixels in each sub-group according to the first and second ordering attributes and performing a two-dimensional sort of the record-assigned pixels in each sub-group (*e.g., the first ordering attribute is according to the categorical attribute numbers; see Figs. 2-5 and the second ordering attribute is according to the splitting attributes by splitting the group into class partitions*).

Re Claim 64:

Ankerst further discloses the claim limitation of determining a first one-dimensional histogram for the first ordering attribute, and a second one-dimensional histogram for the second ordering attribute, wherein sorting the record-assigned pixels in each sub-group is based on the first and second one-dimensional histograms (*e.g., the first ordering attribute is according to the categorical attribute numbers; see Figs. 2-5 and the second ordering attribute is according to the splitting attributes by splitting the group into class partitions*).

Re Claim 65, 72 and 78:

Ankerst further discloses the claim limitation of selecting a visual indicator attribute from the plurality of attributes, wherein the visual indicator attribute is different from both the first and second ordering attributes; and applying colors to the record-assigned pixels according to the visual indicator attribute such that at least some of the record-assigned pixels have different colors (*Fig. 1 illustrates a possible color coding of the different class labels and Figs. 3-5 and 7 illustrate the color coded pixels wherein one segment of pixels has different colors from the other segment of pixels*).

The claims 72 and 78 are subject to the same rationale of rejection set forth in the claim 65.

Re Claims 66, 69, 73, 75-76, 80 and 82:

Ankerst further discloses the claim limitation that partitioning into sub-groups causes at least some of the sub-groups to have different widths measured in terms of pixels along the first axis, and causes at least some of the sub-groups to have different heights measured in terms of pixels along the second axis (*e.g., Fig. 3-5 wherein the data records having the categorical attribute 1 is clearly different from the data records having the categorical attribute 2 and therefore the widths are different and the heights of the class partitions are clearly different; see Page 5).*

The claims 69, 73, 75-76, 80 and 82 are subject to the same rationale of rejection set forth in the claim 66.

Re Claims 68, 74 and 79:

Ankerst further discloses the claim limitation of constructing the pixel bar chart by arranging the sub-groups in an array defined by the first and second axes (*e.g., Fig. 3-5).*

The claims 74 and 79 are subject to the same rationale of rejection set forth in the claim 68.

Claims 83-90:

In the new amendment filed August 8, 2007, Applicant added new claims 83-90 reciting “the first dividing attribute, second dividing attribute, first ordering attribute, and second ordering attribute are distinct attributes.” However, Applicant’s specification discloses in Page

10 that “each of the first dividing attribute and the second dividing attribute may be the same as the first ordering attribute, the second ordering attribute and the visual indicator attribute.”

Applicants pixel bar chart(s) in Figs. 3(a)-3(c) failed to show the first dividing attribute and the second dividing attribute may be distinct from the first order attribute and the second ordering attribute.

Ankerst teaches in Page 4 selecting categorical attributes (dividing attributes) from a plurality of categorical attributes. Ankerst teaches in Fig. 3 an ordering attribute and in Page 3 that each attribute is sorted separately and the induced order is used for the arrangement of the pixels and using the categorical attribute as the first dividing attribute and then mapping the categories into the different numbers in order to sort the bars (groups) and thus the first ordering attribute (the mapping number of the categorical attribute) is distinct from the first dividing attribute (categorical attribute). Ankerst teaches the sorting order determined by an algorithm (Page 3). Ankerst further discloses a different sorting mechanism for sorting the bars (groups) that the user is enabled to change the sorting of the categories by manually dragging them to a desired position. Ankerst teaches selecting a splitting attribute from several candidate splitting attributes (Page 5). Ankerst discloses in Page 4 that the user has to select the splitting attribute as well as the splitting point for each node in the current bar. Ankerst also discloses that the best split points can be calculated and visualized as well. Ankerst teaches the splitting attributes for dividing each bar (group) of pixels into class partitions and pixels/records in each class partition are ordered in a specified way (See Figs. 4-5). Ankerst discloses that the sorted attribute values (second ordering attribute) are mapped to pixels in a line-by-line fashion according to their order

for pixels in a class partition or a bar wherein the Fig. 2 indicates the sorting order within each bar and thus the sorting order for each class partition within each bar.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by **others** in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

Claims 44-48, 50, 53-54, 56, 59-60, and 63-82 are rejected under 35 U.S.C. 102(a) as being anticipated by **M.C. Hao, J. Ladisch, U. Dayal, M. Hsu, A. Krug**; “Visual Mining of E-customer Behavior Using Pixel Bar Charts”, HP Technical Report, June 20, 2001, pp. 1-7 (hereinafter Hao).

Re Claims 44, 50, 56 and 81:

Hao discloses a method to form a pixel bar chart, comprising:

Obtaining a set of records, each record comprising a plurality of attributes (*e.g., Pages 1 and 5-6 of Hao disclose a set of data items corresponding to a set of records such as e-commerce sales transactions with data records having such attributes as time type, number of visits and dollar amounts; the time type is the x-axis and the purchase dollar amount is the y-ordering attribute and the number of visits are the color attributes*);

Assigning a pixel to each of said records to provide record-assigned pixels, wherein every such record-assigned pixel in the chart is assigned to a different record (*e.g., Page 5-6; Figs. 1, 2, 4, 5, and 6*); and

Constructing the pixel bar chart by (*e.g., Page 5-6; Figs. 1, 2, 4, 5, and 6 disclose pixel bar charts*):

Partitioning the record-assigned pixels into groups along a first axis of the pixel bar chart according to a first dividing attribute (*e.g., Page 3 wherein the first dividing attribute is along x-axis such as "Month"; Figs. 1, 2, 4, 5, and 6*);

Partitioning the record-assigned pixels in the groups into sub-groups along a second axis of the pixel bar chart according to a second dividing attribute (*See Page 3 wherein the second dividing attribute is along the y-axis based on the attribute values such as the purchase amount or search type; see Fig. 2 wherein the sub-groups are the clusters of pixels having the same attribute values of the second ordering attribute and the second ordering attribute is the same as the second dividing attribute*);

After partitioning into the sub-groups, sorting, in each of the sub-groups, the record-assigned pixels according to a first ordering attribute (*Page 5 discloses the first ordering attribute on the x-axis and the second order attribute on the y-axis as does e.g., Page 5-6; Figs. 1, 2, 4, 5, and 6*) along the first axis of the pixel bar chart, and according to a second ordering attribute along the second ordering attribute along the second axis of the pixel bar chart (*e.g., See Page 3 wherein the second dividing attribute is along the y-axis based on the attribute values such as the purchase amount or search type; see Fig. 2 wherein the sub-groups are the clusters of pixels having the same attribute values of the second ordering attribute and the second*

ordering attribute is the same as the second dividing attribute. See Page 5-6; Figs. 1, 2, 4, 5, and 6. See also Page 5-6 and Figs. 5-6 that the pixels are colored corresponding to the different attribute values wherein the color represent an additional attribute of the customer; e.g., Pages 5-6 of Hao disclose a set of data items corresponding to a set of records such as e-commerce sales transactions with data records having such attributes as time type, number of visits and dollar amounts), wherein each record-assigned pixel is adjacent at least one other record-assigned pixel (e.g., Page 5-6; Figs. 1, 2, 4, 5, and 6).

The claims 50, 56 and 81 are subject to the same rationale of rejection set forth in the claim 44.

Re Claims 45 and 57:

The claim 45 encompasses the same scope of invention as that of the claim 44 except additional claim limitation for each record-assigned pixel assigning a selectable visual indicator to the record-assigned pixel based on an attribute value of each record so that some pixels have a different visual indicator than other pixels. However, Hao further discloses the claim limitation for each record-assigned pixel assigning a selectable visual indicator to the record-assigned pixel based on an attribute value of each record so that some pixels have a different visual indicator than other pixels (*e.g., Page 5-6; Figs. 1, 2, 4, 5, and 6. See also Page 5-6 that the pixels are colored corresponding to the different attribute values wherein the color represent an additional attribute of the customer*).

The claim 57 is subject to the same rationale of rejection set forth in the claim 45.

Re Claims 46 and 58:

The claim 46 encompasses the same scope of invention as that of the claim 45 except additional claim limitation the visual indicator comprises color. However, Hao further discloses the claim limitation the visual indicator comprises color (*e.g., Page 5-6; Figs. 1, 2, 4, 5, and 6. See also Page 5-6 that the pixels are colored corresponding to the different attribute values wherein the color represent an additional attribute of the customer, e.g., sales amount, number of visits or sales quantity*).

The claim 58 is subject to the same rationale of rejection set forth in the claim 46.

Re Claims 47, 53 and 59:

The claim 47 encompasses the same scope of invention as that of the claim 44 except additional claim limitation said records are obtained from a multidimensional data set in which each record comprises a plurality of attributes and said method further comprises assigning a selectable visual indicator to each record-assigned pixel based on an attribute of each record so that some pixels have a different visual indicator than other pixels. However, Hao further discloses the claim limitation said records are obtained from a multidimensional data set in which each record comprises a plurality of attributes and said method further comprises assigning a selectable visual indicator to each record-assigned pixel based on an attribute of each record so that some pixels have a different visual indicator than other pixels (*e.g., Page 5-6; Figs. 1, 2, 4, 5, and 6. See also Page 5-6 that the pixels are colored corresponding to the different attribute values wherein the color represent an additional attribute of the customer; e.g., Pages 5-6 and Fig. 6 of Hao disclose a set of data items corresponding to a set of records*

such as e-commerce sales transactions with data records having such attributes as time type, number of visits and dollar amounts).

The claims 53 and 59 are subject to the same rationale of rejection set forth in the claim 47.

Re Claims 48, 54, and 60:

The claim 48 encompasses the same scope of invention as that of the claim 44 except additional claim limitation wherein the pixel bar chart comprises a plurality of columns, each column comprising a plurality of pixels and having a width measured in terms of pixels, and the method further comprises causing the width of at least one column to be different than the width of at least one other column. However, Hao further discloses the claim limitation wherein the pixel bar chart comprises a plurality of columns, each column comprising a plurality of pixels and having a width measured in terms of pixels, and the method further comprises causing the width of at least one column to be different than the width of at least one other column (*e.g., Page 5-6; Figs. 1, 2, 4, 5, and 6*).

The claims 54 and 60 are subject to the same rationale of rejection set forth in the claim 48.

Re Claims 63, 67, 70-71, 77:

Hao further discloses the claim limitation of sorting the record assigned pixels in each sub-group according to the first and second ordering attributes and performing a two-dimensional sort of the record-assigned pixels in each sub-group. Hao discloses in

Page 3 the claim limitation. Hao discloses in Page 3 that the second dividing attribute is along the y-axis based on the attribute values such as the purchase amount or search type; see Fig. 2 wherein the sub-groups are the clusters of pixels having the same attribute values of the second ordering attribute and the second ordering attribute is the same as the second dividing attribute.

Re Claim 64:

Hao further discloses the claim limitation of determining a first one-dimensional histogram for the first ordering attribute, and a second one-dimensional histogram for the second ordering attribute, wherein sorting the record-assigned pixels in each sub-group is based on the first and second one-dimensional histograms. Hao discloses in Page 3 the claim limitation. Hao discloses in Page 3 that the second dividing attribute is along the y-axis based on the attribute values such as the purchase amount or search type; see Fig. 2 wherein the sub-groups are the clusters of pixels having the same attribute values of the second ordering attribute and the second ordering attribute is the same as the second dividing attribute.

Re Claim 65, 72 and 78:

Hao further discloses the claim limitation of selecting a visual indicator attribute from the plurality of attributes, wherein the visual indicator attribute is different from both the first and second ordering attributes; and applying colors to the record-assigned pixels according to the visual indicator attribute such that at least some of the record-assigned pixels have different colors. Hao discloses in Page 3 the claim limitation. Hao discloses in Page 3 that the second dividing attribute is along the y-axis based on the attribute values such as the purchase amount or search type; see Fig. 2 wherein the sub-groups are the clusters of pixels having the same attribute values of the second ordering attribute and the second ordering attribute is the same as the

second dividing attribute. See also Page 5-6 and Figs. 5-6 that the pixels are colored corresponding to the different attribute values wherein the color represent an additional attribute of the customer; e.g., Pages 5-6 of Hao disclose a set of data items corresponding to a set of records such as e-commerce sales transactions with data records having such attributes as time type, number of visits and dollar amounts.

The claims 72 and 78 are subject to the same rationale of rejection set forth in the claim 65.

Re Claims 66, 69, 73, 75-76, 80 and 82:

Hao further discloses the claim limitation that partitioning into sub-groups causes at least some of the sub-groups to have different widths measured in terms of pixels along the first axis, and causes at least some of the sub-groups to have different heights measured in terms of pixels along the second axis (*e.g., Fig. 2 and Page 3*).

The claims 69, 73, 75-76, 80 and 82 are subject to the same rationale of rejection set forth in the claim 66.

Re Claims 68, 74 and 79:

Hao further discloses the claim limitation of constructing the pixel bar chart by arranging the sub-groups in an array defined by the first and second axes (*e.g., Fig. 2 and Page 3*).

The claims 74 and 79 are subject to the same rationale of rejection set forth in the claim 68.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jin-Cheng Wang whose telephone number is (571) 272-7665. The examiner can normally be reached on 8:00 - 6:30 (Mon-Thu).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kee Tung can be reached on (571) 272-7794. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

jcw

Jin Cheng Wang